

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 07 41481	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 02/08587	International filing date (day/month/year) 01.08.2002	Priority date (day/month/year) 01.08.2002
International Patent Classification (IPC) or both national classification and IPC H04L1/00		
Applicant NOKIA CORPORATION et al.		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- | | | |
|------|-------------------------------------|--|
| I | <input checked="" type="checkbox"/> | Basis of the opinion |
| II | <input type="checkbox"/> | Priority |
| III | <input type="checkbox"/> | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input type="checkbox"/> | Lack of unity of invention |
| V | <input checked="" type="checkbox"/> | Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> | Certain documents cited |
| VII | <input type="checkbox"/> | Certain defects in the international application |
| VIII | <input type="checkbox"/> | Certain observations on the international application |

Date of submission of the demand 01.03.2004	Date of completion of this report 29.10.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Ghigliotti, L Telephone No. +31 70 340-3385 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 02/08587

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-16 as originally filed

Claims, Numbers

11 (part), 12-20 as originally filed
1-3 received on 17.07.2004 with letter of 15.07.2004
4-10, 11 (part) received on 24.07.2004 with letter of 21.07.2004

Drawings, Sheets

1/12-12/12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 02/08587**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-8, 11-17
	No: Claims	1, 9, 10, 18-20
Inventive step (IS)	Yes: Claims	2-8, 11-17
	No: Claims	1, 9, 10, 18-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

1. Reference is made to the following document:
D1: US2002/0071407 (Koo et al.)
2. 2.1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document **D1** discloses (the references in parentheses applying to figure 8 of this document) a method of transmitting a block of digital data comprising:

- processing first and second data flows ("user information", 811; "side information", 851) in first and second manners (page 8, paragraph 97, lines 6-8);
- concatenating (827) data from the first and second processed data flows ("user information" 811; "side information" 851) and a code identifying said manners (TFCl, see page 8, right column, line 2) to produce a block of concatenated data (831);
- interleaving said block (page 8, right column, lines 12-15);
- transmitting said block (paragraph 96, last three lines).

In the last sentence of paragraph 98 of **D1** (cf. also figure 8) it is stated that the process of building the DPCH comprises a secondary interleaving. In **D1** it is then maintained that, as a result of the secondary interleaving, the user information and the side information may not be mapped onto the types of DPCH with fixed format.

Document **D1** does not provide further details on this issue and does not explain why this mapping is not possible. However, for the skilled reader, the sentence implies that some other kind of mapping has to be carried out, or other types of DPCH formats should be used. In any case, both the mapping and the secondary interleaving are carried out (paragraph 98, lines 11-14 and 18-20).

As is well-known in the art, interleaving to the DPCH is generally carried out to provide some degree of time diversity to the data transmitted on the physical channel. Although document **D1** is not explicit on the exact way the secondary interleaving is executed, the skilled person, willing to put into practice the teachings of **D1**, would apply interleaving in the most common way, i.e. on both transport channels and on the TFCl, to be able to protect both. Document **D1** has no indication of the contrary.

On balance, it is concluded that the step of interleaving said block (831) of **D1** is, at least implicitly:

- such that the first and second data flows (811, 851) and said code (TFCl) are

affected,
as claimed in claim 1.

2.2. The system/method of figure 8 shows the presence of multiple (user) data flows in information "type 1", and they are also implied by the reference to UMTS on page 1, paragraph 4, 4th line).

2.3. The same reasoning applies, mutatis mutandis, to independent claim 10.

2.4. The subject-matter of dependent claims 18, 19, 20 is also disclosed in document D1, see paragraphs 2 and 4.

The subject-matter of dependent claim 9 is disclosed in document D1 (see paragraph 1).

3. The combination of the features of claims 2-8, 11-17 is neither known from, nor rendered obvious by, the available prior art.

Claims

1. A method of transmitting a block of digital data, the method comprising:
processing first and second data flows in first and second manners to
produce first and second processed data flows;
concatenating data from the first and second processed data flows and a
code identifying said manners to produce a block of concatenated data;
interleaving said block such that the first and second data flows and said
code are affected; and
transmitting said block.
2. A method according to claim 1, including establishing data representing a
set of processing manners, said data defining a block size and a transmission
time therefor for each processing manner, wherein the depth of said interleaving
corresponds to a transmission time not greater than the least of said defined
transmission times.
3. A method of transmitting a block of digital data, the method comprising:
establishing data representing a set of processing manners, said data
defining a block size and a transmission time therefor for each processing
manner,
processing at least one data flow, the or each data flow being processed
according to manners selected from said set of processing manners;
concatenating data from the or each data flow and a code identifying said
selected manner or manners to produce a block of concatenated data;
interleaving said block; and
transmitting said block,
wherein the depth of said interleaving corresponds to a transmission time
not greater than the least of said defined transmission times.

4. A method according to claim 2 or 3, wherein said defined transmission times are integer multiples of the transmission time corresponding to said interleaving depth.
5. A method according to claim 2, 3 or 4, including receiving a signal defining said set of processing manners.
6. A method according to claim 5, including storing data representing a plurality of processing manners and selecting from said stored data in response to said signal defining said set of processing manners.
7. A method according to any one of claims 2 to 6, wherein each processing manner includes an interleaving process definition.
8. A method according to claim 7, wherein interleaving according to an interleaving process definition is only performed if the transmission time of the same processing manner is greater than the least of the transmission times of said set.
9. A method according to any preceding claim, wherein said block is transmitted by radio waves.
10. A transmitter for transmitting blocks of digital data, the transmitter comprising processing means configured to:
 - process first and second data flows in first and second manners to produce first and second processed data flows,
 - concatenate data from the first and second processed data flows and a code identifying said manners to produce a block of concatenated data, and
 - interleave said block such that the first and second data flows and said code are affected; and
 - transmitting circuitry for transmitting said block.
11. A transmitter according to claim 9, wherein the processing means includes a memory storing data representing a set of processing manners, said data defining a block size and a transmission time therefor for each processing manner, and the processing means is configured such that the depth of said

INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/EE 02/00847

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H04L1/00 H04L29/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 H03M H04L H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 62465 A (ERICSSON TELEFON AB L M) 19 October 2000 (2000-10-19)	1,5-9, 11-13, 37,42,43
Y	page 5, line 29 - page 6, line 8; figure 3 page 8, line 1 - line 13 page 8, line 21 - line 25 page 7, line 26 - line 31 page 10, line 6 - line 14 page 10, line 27 - line 29 -/-	14-22, 24-26, 44-47, 49,50

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *G* document member of the same patent family

Date of the actual completion of the international search

21 October 2002

Date of mailing of the international search report

30. 10. 2002

Name and mailing address of the ISA

 European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl
 Fax: (+31-70) 340-3016

Authorized officer

Papantoniou, A

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 047 219 A (MITSUBISHI ELECTRIC TELECOM EU) 25 October 2000 (2000-10-25) page 3, line 26 - line 40 page 6, line 41 - line 56; figure 1 page 7, line 41 - page 8, line 15 page 10, line 31 - line 45	1,4, 11-13, 37,40, 42,43
Y	EP 1 093 315 A (NOKIA MOBILE PHONES LTD) 18 April 2001 (2001-04-18) page 2, line 49 - line 56 page 3, line 26 - line 37 page 7, line 10 - line 15	14-22, 24-26, 29, 44-47, 49,50,53
A	page 9, line 36 - line 38 page 10, line 36 - line 53 page 11, line 11 - line 24	27,51
A	KRIAA F ET AL: "CODING OF TFCI BY USING CHANNEL OPTIMISED B-ADJACENT CODE FOR UMTS" ITG FACHBERICHTE, VDE VERLAG, BERLIN, DE, vol. 170, 28 January 2002 (2002-01-28), pages 27-34, XP001094527 ISSN: 0932-6022 page 27, right-hand column, paragraph 1 page 28, left-hand column, paragraph 3 page 28, right-hand column, paragraph 1	14,44
A	EP 0 938 207 A (LUCENT TECHNOLOGIES INC) 25 August 1999 (1999-08-25) page 4, line 36 - line 40 page 5, line 41 - line 44 page 9, line 5 - line 22	14,44
X	WO 01 17283 A (ERICSSON TELEFON AB L M) 8 March 2001 (2001-03-08) page 3, line 1 - line 8 page 3, line 13 - line 16 page 4, line 6 - line 22 page 6, line 10 - line 25 page 7, line 2 - line 7 page 10, line 4 - line 18 page 11, line 3 - line 7 page 11, line 16 - line 24	27,28, 30-32, 34-36, 51,52, 54-56,58
Y		29,53

-/-

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 1 006 692 A (SIEMENS AG) 7 June 2000 (2000-06-07)</p> <p>column 7, line 7 - line 34 claim 1; figure 5</p>	<p>27, 28, 30-32, 34-36, 51, 52, 54-56, 58</p>
A	<p>EP 1 009 174 A (LG ELECTRONICS INC) 14 June 2000 (2000-06-14) column 2, line 19 - line 42 column 3, line 21 - line 40</p>	<p>27, 51</p>
A	<p>BERG M ET AL: "Performance enhancements for the GSM/EDGE radio access network" VEHICULAR TECHNOLOGY CONFERENCE FALL 2000, vol. 6, 24 September 2000 (2000-09-24), pages 2720-2727, XP010525080 Boston, MA, USA page 2721, left-hand column, paragraph 1; figure 1</p>	<p>27, 33, 51, 57</p>
X	<p>LAU V K N ET AL: "Multiple access control protocol for integrated isochronous and bursty data services" IEE PROCEEDINGS: COMMUNICATIONS, INSTITUTION OF ELECTRICAL ENGINEERS, GB, vol. 147, no. 6, 11 December 2000 (2000-12-11), pages 311-316, XP006013999 ISSN: 1350-2425 page 311, right-hand column, paragraph 1 page 312, right-hand column, paragraph 2; figure 1</p>	<p>59-61, 76-78</p>
X	<p>HUARD J-F ET AL: "REALIZING THE MPEG-4 MULTIMEDIA DELIVERY FRAMEWORK" IEEE NETWORK, IEEE INC. NEW YORK, US, vol. 12, no. 6, November 1998 (1998-11), pages 35-45, XP000873126 ISSN: 0890-8044 page 36, right-hand column, paragraphs 3, 4 page 37, left-hand column, paragraph 4 -right-hand column, paragraph 1 page 38, right-hand column, paragraph 1 figure 2</p>	<p>59, 76</p>

INTERNATIONAL SEARCH REPORT

Internation No
PCT/OL 02/00847

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>GESSNER C ET AL: "LAYER 2 AND LAYER 3 OF UTRA-TDD" VTC 2000-SPRING. 2000 IEEE 51ST. VEHICULAR TECHNOLOGY CONFERENCE PROCEEDINGS. TOKYO, JAPAN, MAY 15-18, 2000, IEEE VEHICULAR TECHNOLOGY CONFERENCE, NEW YORK, NY: IEEE, US, vol. 2 OF 3. CONF. 51, 15 May 2000 (2000-05-15), pages 1181-1185, XP000968056 ISBN: 0-7803-5719-1 page 1182, left-hand column, line 1 - line 4 page 1183, left-hand column, line 1 - line 5 page 1183, left-hand column, line 24 - line 30 page 1184, left-hand column, line 18 - line 31 page 1184, right-hand column, line 19 - line 34 figure 3</p> <p>-----</p>	1,37, 59-61, 76-78

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 02/00847

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-13, 37-43

Variable puncturing and repetition of transport channel encoders / decoders whereby transport channels between the physical and a higher layer are collectively operable in response to transport format information.

2. Claims: 14-26, 44-50

Variable transport format information of transport channel encoders / decoders whereby transport channels between the physical and a higher layer are collectively operable in response to the type of modulation used.

3. Claims: 27-36, 51-58

Transport format information combination and selection using a transfer format assembling apparatus responsive to a transport format combination descriptor the latter being responsive to a higher level service request.

4. Claims: 59-75, 76-87

Selective enabling and disabling of transport channel encoders / decoders whereby transport channels between the physical and a higher layer are collectively operable.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int

Application No

PCT/SE 02/00847

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0062465	A	19-10-2000	AU 4322700 A CN 1355972 T EP 1169802 A1 WO 0062465 A1	14-11-2000 26-06-2002 09-01-2002 19-10-2000
EP 1047219	A	25-10-2000	FR 2792787 A1 FR 2792788 A1 CN 1275873 A CN 1339887 A EP 1047219 A1 EP 1156616 A2 JP 2001016640 A JP 2002135853 A US 2002027883 A1	27-10-2000 27-10-2000 06-12-2000 13-03-2002 25-10-2000 21-11-2001 19-01-2001 10-05-2002 07-03-2002
EP 1093315	A	18-04-2001	FI 992232 A EP 1093315 A2	16-04-2001 18-04-2001
EP 0938207	A	25-08-1999	EP 0938207 A2 JP 2000236366 A	25-08-1999 29-08-2000
WO 0117283	A	08-03-2001	AU 7325900 A EP 1206867 A2 WO 0117283 A2	26-03-2001 22-05-2002 08-03-2001
EP 1006692	A	07-06-2000	EP 1006692 A1 WO 0033516 A1 EP 1135898 A1	07-06-2000 08-06-2000 26-09-2001
EP 1009174	A	14-06-2000	EP 1009174 A2	14-06-2000